

## **Responses of Stream Benthic Macroinvertebrates to Fire**

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## **Abstract**

Synthesis of published research on the responses of stream benthic macroinvertebrates to fire in western United States indicates a consistent pattern of response that can guide resource management and future research. Direct effects of fire generally are minor or indiscernible. Indirect effects, resulting primarily from increased rates of runoff and channel alteration, have the greatest impacts on macroinvertebrate community metrics and foodweb responses. Postfire effects are variable in time and space, but in smaller size streams (1<sup>st</sup> to 4<sup>th</sup> order) that are otherwise undisturbed, changes generally are restricted to the first 5 to 10 years following fire and are associated with the more intense burns (crown fires with  $\geq 50\%$  of the catchment involved). In unfragmented habitats, initially supporting intact, functioning stream ecosystems, recovery from fire appears to be relatively rapid and to contribute to enhanced aquatic productivity and biodiversity. However, in poorly managed watersheds and those subjected to indiscriminate salvage logging, impacts from fire are expected to be greater and recovery of the macroinvertebrate communities and stream ecosystems more protracted.

Key Words: benthos, salvage logging, streams, wildfire ecology, forest management